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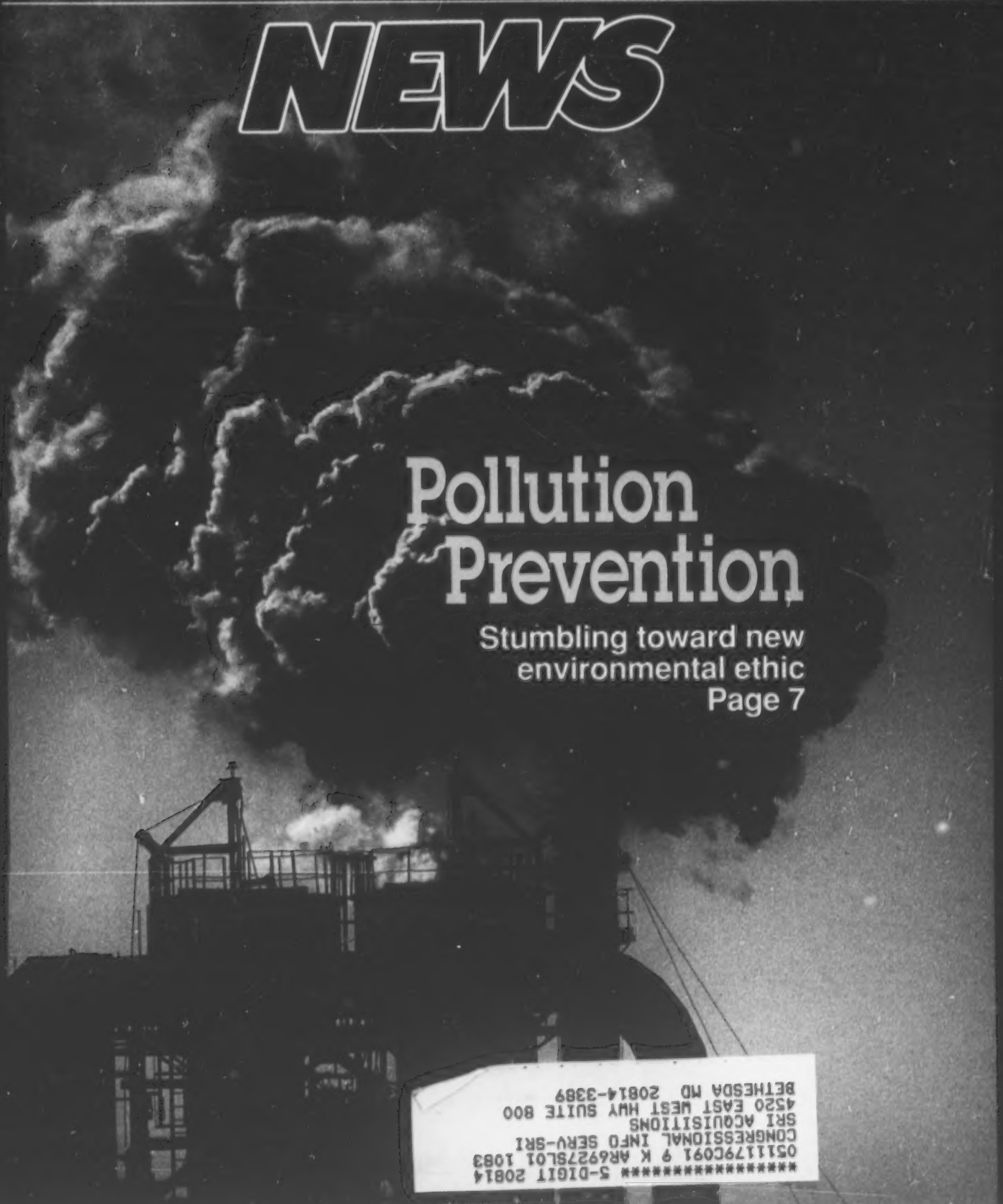
JULY 8, 1991

CHEMICAL & ENGINEERING

NEWS



Pollution Prevention

Stumbling toward new environmental ethic

Page 7

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News of the Week

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■ **Canadian scientists develop new approach to oligosaccharide synthesis that may lead to automated technique.** **Page 5**

■ **Monsanto launches huge restructuring program that will consolidate its chemical businesses, reduce work force by 2500 worldwide.** **Page 5**

■ **Forensic chemist has exposed a scheme by drug dealers to smuggle cocaine by compounding it with polystyrene, molding the resin into plastic parts, and then recovering the cocaine by extraction after import into the U.S.** **Page 6**

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Business

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Mexico still faces shortages of basic petrochemicals, lacks needed investment funds despite policy reforms aimed at attracting foreign participation. **Page 24**

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Science/Technology

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News Focus

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LETTERS

Make a positive change

The letter by Mark C. Piton (C&EN, May 13, page 4) was encouraging and refreshingly positive. I am tired of reading and hearing the innumerable complaints of the problems caused by an ill-informed public. Complaining does not help. We need to redirect this negative energy into positive pursuits. I feel it is our responsibility as chemists, the chemically informed public, to do what we can individually to improve our image in the eyes of our respective communities.

I have taken Piton's advice, and would like to share a few experiences from my part of the world. This past year I have participated in a program called "Chemistry Is Fun" sponsored by the chemical company where I am employed. All of the approximately 50 participants are free to design their own program of chemical demonstrations. The programs are designed to show young people, grades three through 12, that chemistry is fun and that it surrounds them in their everyday lives. I prefer grades three to five. These kids are energetic, curious, and eager to learn. The greatest challenge I face is to explain each demonstration in terms simple enough for the students to understand.

I always start out by asking them to share what comes to mind when they think about chemistry. The terms shared most often (sadly but not surprisingly) are explosions, dangerous, nerds, mad scientists, fires, accidents, and so on. Often I am asked to "make something blow up." Of course, I try to dispel these fears. Encouragingly, however, they are very concerned to know what I will be doing with the wastes generated during the demonstrations. Will I bury it in a landfill? Will I clean out and reuse the sample bottles? Explaining our policy of incineration, I am questioned about the possibility of toxic emissions from the burning process. I am encouraged to see this awareness among the young children. When I was their age, I didn't think about these issues. I am excited about the potential of the upcoming generation, but they need to be properly educated to make informed decisions for their future. I am not stressing that they should all become chemists, just that they have a fundamental understanding so that they will be more responsible citizens.

There is so much we can teach these children. I always include an experiment with a foamed polystyrene cup. I am able to explain that it is not a "styrofoam" cup, the name commonly used even among the chemical community. Styrofoam is the trademark for the insulation (blue) made by Dow Chemical for the construction industry. I begin by holding up a regular white foamed polystyrene cup and ask the class to identify it. When they respond by calling it a styrofoam cup, I correct them before proceeding with the experiment. I show them that polystyrene is soluble in methylene chloride but will precipitate by the subsequent addition of methanol. This naturally leads us to a discussion on recycling, another subject of concern and interest to them.

I am amazed that on several occasions the children have expressed genuine surprise to see a female chemist. As a result, I am especially eager to encourage the girls to follow their interests and to ignore any lower expectations that may sometimes be placed on them. One principal asked us to "encourage the girls because some of them are afraid to take math and science." In a civilized society such as ours, this should not be the case; this must change. We, the chemical community, can provide positive role models for these young women and men.

I urge you all to do what you can within you own area and your circle of influence. If we all work together, we can make a difference. We can make a positive change.

Virginia A. Dais
Midland, Mich.

Corrections

- April 29, page 21: Coauthors of the paper on the liquid membrane flue-gas cleanup system, besides Soung S. Kim, Department of Energy's Pittsburgh Energy Technology Center, were S. Majumdar, J. S. Cha, T. Papadopoulos, and K. K. Sirkar of the department of chemistry and chemical engineering, Stevens Institute of Technology.
- June 17, page 48: The technical program summary for the combined chemical congress and ACS national meeting in August lists two symposia on biopolymers offered by the Analytical Chemistry Division. The full title for the symposium listed as "chromatography of biopolymers" is "Preparative/Process Chromatography of Biopolymers." It will be held all day on Tuesday, Aug. 27. The other biopolymer symposium, "Rapid Biopolymer Characterization," will be held on Friday morning, Aug. 30.

House Doesn't Tarry in Completing Work on Agency R&D Funding Bills

None lose and many gain, with NSF and EPA support up 18%, but funding for space station *Freedom* is at expense of other NASA programs

Janice R. Long, C&EN Washington

The House, moving at a near record pace, completed its work on all of the fiscal 1992 appropriations bills that fund the government's research and development activities before lawmakers headed home for the July 4 recess. The Senate will work its will after the recess.

The House provided increases of well over 15% for research programs at the National Science Foundation and the Environmental Protection Agency. Total funding for Department of Energy research programs is up 12%, while the National Institutes of Health and the Department of Agriculture had to settle for 7% increases.

Less fortunate were the research activities of the departments of Defense and Commerce, for both of which the House approved 3% increases. And the National Aeronautics & Space Administration's research budget is frozen at its current level.

The full House made very few, mostly minor, changes in the bills that were reported out of the House Committee on Appropriations. The one exception was a major change in H.R. 2519, the departments of Veterans Affairs and Housing & Urban Development and Independent Agencies Appropriations Bill, which provides funds for NASA.

The Appropriations Committee refused to fund the $1.93 billion request for space station *Freedom* on the grounds that other higher priority programs needed the money that would be freed up by suspending the program for the time being. That decision allowed the committee to provide funding increases for all of NASA's other research programs, while cutting overall research funding 14% from current levels to $5.2 billion in fiscal 1992.

However, the full House overturned that decision, voting to continue funding for the space station by freezing spending for all NASA programs at fiscal 1991 levels.

What's happening to basic energy sciences in fiscal '92 may be a harbinger of what's to come for other programs

The House did not overturn the committee's decision not to fund NSF's new $50 million academic research instrumentation program. The committee explained that it had denied the funds "without prejudice on the basis of a lower overall priority and in view of the exceptionally tight budget limitations facing all domestic discretionary programs."

One obviously higher priority for the committee was NSF's academic research facilities modernization program, which the Administration had decided not to fund in fiscal 1992. The committee rejected that decision, providing $20 million for the program, $478,000 less than is being spent on it this year.

Another high priority with both the committee and the Administration is NSF's science education programs. The Administration had asked for a 21% increase to $390 million for these programs. It got a 35%, $113 million, increase to $435 million. Out of that increase, $25 million is earmarked for a new graduate traineeship program with funds allocated on a competitive basis directly to recipient institutions, and $13 million is earmarked for "summer institutes" associated with NSF teacher preparation and teacher enhancement programs.

For NIH the House approved an overall fiscal 1992 funding level of $8.8 billion, with the individual institutes receiving increases ranging from 6 to 12%. Fiscal 1992 is one of the rare years in which the House did not provide a lot more money for NIH than had been requested by the Administration, coming in just 1% over the $8.7 billion request. In fact, the Appropriations Committee took Bush's 1992 budget submission with the largest increase ever presented by a President for NIH as a hopeful sign that Congress and the Administration were in general agreement on the need for stability and predictability in NIH's budget.

The committee said, however, that it "has been greatly disturbed, as has the general public, with recent publicity regarding abuses by certain institutions in claiming reimbursements for costs under the indirect cost recovery system." It went on to say that it is concerned that these specific cases, "as offensive as they are," may merely be superficial signs of a systemic problem with the whole federal research grant system.

The committee endorsed the Office of Management & Budget's 26% cap on a wide range of indirect administrative costs, which is expected

House backs Administration on need for more R&D funds

$ Millions	1992 Appropriation	1992 Request	1991	% difference Appropriation-request	% change 1991-92
Defense	**$36,949.5**	**$38,921.0**	**$35,722.3**	**−5%**	**3%**
Air Force	14,263.9	15,032.6	11,961.3	−5	19
Defense agencies	8,979.1	10,238.5	9,115.7	−12	−2
Navy	7,464.9	7,342.6	9,237.9	2	−19
Army	6,241.6	6,307.3	5,607.4	−1	−11
NIH[a]	**8,824.9**	**8,737.3**	**8,239.0**	**1**	**7**
Cancer	1,830.5	1,772.6	1,676.5	3	9
Heart, Lung & Blood	1,202.4	1,209.9	1,126.9	−1	7
Allergy & Infectious Diseases	972.6	976.7	907.3	0	7
General Medical Sciences	820.2	833.2	760.0	−2	8
Diabetes & Digestive & Kidney Diseases	667.8	658.6	615.3	1	8
Neurological Diseases & Stroke	583.4	583.4	541.7	0	8
Child Health & Human Development	524.7	520.6	478.9	1	10
Aging	362.5	348.6	323.7	4	12
Eye	272.3	272.3	253.2	0	7
Environmental Health Sciences	254.9	254.5	241.0	0	6
Arthritis & Musculoskeletal & Skin Diseases	205.0	204.8	193.2	0	6
Dental Research	161.2	160.9	148.9	0	8
Deafness & Other Communicative Disorders	144.5	146.3	134.9	−1	7
Other	822.7	794.9	837.5	3	−2
Energy R&D	**6,263.4**	**5,984.0**	**5,604.0**	**5**	**12**
Energy supply	2,854.0	2,821.4	2,527.1	1	13
General science and research	1,405.5	1,548.9	1,148.7	−9	22
Weapons	1,275.6	1,262.6	1,254.9	1	2
Fossil	454.0	77.0	458.7	490	−1
Conservation	274.3	274.1	214.6	0	28
NASA R&D	**6,023.6**	**7,198.5**	**6,023.6**	**−16**	**0**
NSF	**2,643.5**	**2,643.5**	**2,238.0**	**0**	**18**
Research and related activities	1,960.5	1,963.5	1,694.2	0	16
Education and human resources	435.0	390.0	322.3	11	35
Antarctic research	118.0	118.0	100.0	0	18
Salaries & expenses	110.0	122.0	101.0	−10	9
Academic research facilities	20.0	0	20.5	100	0
Academic research instrumentation	0	50.0	0	−100	0
USDA	**1,306.9**	**1,256.5**	**1,221.2**	**4**	**7**
Agricultural Research Service	710.4	709.2	665.1	0	7
Cooperative State Research Service	412.9	384.1	388.5	7	6
Forest research	183.6	163.2	167.6	12	9
EPA R&D	**512.4**	**491.5**	**433.7**	**4**	**18**
Commerce	**461.4**	**460.6**	**447.6**	**0**	**3**
NIST	237.6	248.0	216.3	−4	10
NOAA	223.8	212.6	232.3	5	−4
TOTAL	**$62,985.6**	**$65,692.9**	**$59,929.4**	**−4%**	**5%**

Note: All numbers are estimates. a Includes AIDS research and research training. **Source:** House Appropriations Committee reports

to save NIH $55 million next year, as an "effective first step." The next step, according to the committee, must deal directly with the broad area of facilities renovation and replacement in a thoughtful way. In another area, the committee asked whether it was "unreasonable to ask a peer review panel to advise NIH whether a project is technically sound, important to biomedical science, fiscally reasonable, and deserving of support with public funds."

At DOE, funding for basic energy sciences is increased less than 1% to $715 million, the amount requested by the Administration. Within that total, funding for chemical sciences is essentially frozen at $158 million, and funding for materials sciences is down 7% to $257 million. One major difference between DOE's fiscal 1992 appropriations bill and those approved by Congress in previous years is that it is not littered with funds earmarked for specific projects at various academic institutions.

What's happening to basic energy sciences in fiscal 1992 may be a harbinger of what is to come for other research programs. In a number of its reports on the 13 appropriations bills, the committee made some reference to the fact that it is not possible to fund 10 to 15% increases for all federal domestic discretionary agencies when total growth permitted by the 1991 Budget Summit Agreement is less than 7.5%. "The simple truth," according to the committee, "is that unless the Administration is willing to either increase revenues or curtail nondomestic discretionary spending, this nation's human, technical, and physical infrastructure will continue to erode."

The crunch has already hit at DOD. Its programs are allowed to grow by just about 4% under the 1990 budget agreement. The 3% increase allowed for DOD research programs by the House is below even that target. Funding for DOD's technology base programs—essentially basic research—fares even worse; it is essentially frozen at $3.9 billion, 5% less than the request. Funding for the Strategic Defense Initiative is down 7% to $2.7 billion, 46% less than the Administration had wanted. □